CLAIMS:

1. A fibre channel port module comprising:

a fibre data interface, adapted to couple to a 10.2 gigabit per second link, for receiving byte striped fibre channel frames;

a front end coupled to said fibre data interface for transmitting and receiving byte striped fibre channel frames to and from said fibre data interface;

a route controller coupled to said front end for route processing of said fibre channel frames, wherein said route processing comprises determining a destination port on a switching element for said fibre channel frames; and

a backplane data interface operative for coupling to a plurality of ports on a switching element.

2. The fibre channel of claim 1 wherein said front end and said fibre data interface is ANSI 10GFC compliant.

3. The fibre channel port module of claim 1 wherein said fibre data interface further comprises a plurality of fibre side integrated serializer/deserializer (ISD) modules coupled to an extender sublayer using a plurality of lanes, wherein said sublayer receives data from said fiber side ISD modules and performs lane deskew and alignment and 8B/10B decode.

4. The fibre channel port module of claim 3 wherein said data output from said sublayer comprises four lanes of octet data at 318.75 Mhz.

5. The fibre channel port module of claim 3, wherein said plurality of ISD modules comprise four ISD

modules each operating at a data rate of up to 3.1875 gigabits per second.

6. The fibre channel port module of claim 1 further comprising a XAUI module coupled to said fibre channel data interface, wherein said XAUI module is configured for byte striping fibre channel frames.

7. The fibre channel port module of claim 1 wherein said backplane data interface comprises a plurality of port module ports, wherein each port module port comprises a backplane integrated serializer/deserializer (ISD) module, a backplane data interface receiver and a backplane data interface transmitter, wherein each backplane ISD module is configured for coupling to a first port on said switching element.

8. The fibre channel port module of claim 7 wherein said backplane data interface receiver is configured for providing 8B/10B decoding and said backplane data interface transmitter is configured for providing 8B/10B encoding.

9. The fibre channel port module of claim 1 further comprising:

buffer memory having a plurality of buffers for storing a fibre channel frame, said buffer memory configured to handle a throughput at a data rate of 20.4 gigabits per second;

a frame writer coupled to said front end for storing fibre channel data in said buffer memory, said frame writer configured to handle a throughput at a data rate of 10.2 gigabits per second;

a queue manager coupled to said buffer controller and said route controller, said queue manager configured to receive messages from said route controller

and dynamically build queue entries for each destination port determined by said route controller; and

a buffer controller coupled to said buffer memory, said buffer controller is configured to write data to and read data from memory at a data rate of 10.2 gigabits per second.

10. The fibre channel port module of claim 9 wherein said buffer memory is configured to handle a 10.2 gigabits per second write and six simultaneous 1.7 gigabits per second reads.

11. The fibre channel port module of claim 1 wherein said route controller is configured to determine that a destination identification of a fibre channel frame is a 10.2 gigabit port.

12. The fibre channel port module of claim 1 wherein said front end is further adapted for performing a fibre channel protocol validation on reassembled fibre channel frames from the byte striped fibre channel frames.

13. A fibre channel fabric comprising:

a first switching element having a plurality of switch ports;

a first fibre channel port module comprising:

a fibre data interface, configured for interfacing to a 10.2 gigabit-per-second link, for receiving byte striped fibre channel frames;

a front end coupled to said fibre data interface for transmitting and receiving byte striped fibre channel frames to and from said fibre data interface and for reassembling byte striped data received from the fibre data interface; and

a backplane data interface having a plurality of port module ports; and

a plurality of links coupling said switch ports to said port module ports.

14. The fibre channel fabric of claim 13 wherein said plurality of links comprises four links coupling the plurality of port modules of said backplane data interface to the switch ports of said first switching element.

15. The fibre channel fabric of claim 14 wherein said plurality of links operate at a data rate of 1.0625 gigabits per second and/or 2.125 gigabits per second.

16. The fibre channel fabric of claim 13 further comprising a second switching element having a plurality of switch ports, wherein the switch ports of said second switching element are coupled to the plurality of port module ports of said backplane data interface of said fibre channel port module, wherein said fibre channel fabric provides a 10.2 gigabit per second throughput.

17. The fibre channel fabric of claim 16 further comprising a second fibre channel port module comprising:

a fibre data interface, configured for interfacing to a 10.2 gigabit-per-second link, for receiving byte striped fibre channel frames;

a front end coupled to said fibre data interface for transmitting and receiving byte striped fibre channel frames to and from said fibre data interface and for reassembling byte striped data received from the fibre data interface; and

a backplane data interface having a plurality of port module ports, wherein said second fibre channel port module is coupled from the port module ports to the

switch ports of said first and second switching elements by a plurality of links.

18. A method of providing 10.2 gigabits per second throughput from a first port module to a second port module, comprising:

receiving fibre channel data at said first port module comprising a first fibre data interface configured for interfacing to a 10.2 gigabit-per-second link and a first backplane data interface having a plurality of port module ports;

determining said fibre channel data is destined for said second port module comprising a second fibre data interface configured for interfacing to a 10.2 gigabit-per-second link and a second backplane data interface having a plurality of port module ports;

coupling said plurality of port module ports of said first port module to a first and second switching element using a first plurality of links, wherein frame striping on said first plurality of links provides a data rate of up to 10.2 gigabits per second;

coupling said plurality of port module ports of said second port module to a first and second switching element using a second plurality of links, wherein frame striping on said second plurality of links provides a data rate of up to 10.2 gigabits per second;

routing said fibre channel data from said first port module to said second port module.

19. A method of providing link aggregation at a first port comprising a port module having a fibre data interface and a backplane data interface, wherein said fibre data interface is configured for coupling to a 10.2 gigabit-per-second link and receiving byte striped fibre channel frames and said backplane data interface is configured for coupling a plurality of port module ports

to at least one fibre channel switch, said method comprising:

coupling said fibre data interface to a 10.2 gigabit-per-second link;

coupling said plurality of port module ports to a plurality of switch ports on said at least one switching element using a plurality of backplane links;

receiving byte striped fibre channel frames at said first port;

reassembling the byte striped fibre channel frames in the first port;

determining said fibre channel frames are destined for a second port; and

routing said fibre channel frames from said first port to said second port over said plurality of backplane links.

20. The method of claim 19 wherein said plurality of backplane links comprise a plurality of 2.125 gigabit-per-second links.

21. The method according to claim 19 wherein said 10.2 gigabit per second link is ANSI 10GFC compliant.

22. The method according to claim 19 wherein said second port comprises a 1.0625 gigabit-per-second port and/or a 2.125 gigabit-per-second port.

23. The method of claim 19 wherein said plurality of backplane links are aggregated such that fibre channel data flows over said plurality of backplane links simultaneously thereby providing higher bandwidth together than each link provides individually.

24. A fibre channel port module comprising:

a fibre data interface, adapted to couple to a high bandwidth link, for receiving byte striped fibre channel frames; and

a backplane data interface coupled to said fibre data interface, adapted to couple to a plurality of low bandwidth links coupled to a plurality of ports on a switching element, for transmitting frame striped fibre channel frames over said plurality of low bandwidth links.

25. The fibre channel port module of claim 24 further comprising a front end coupled to said fibre data interface for receiving byte striped fibre channel frames, reassembling said byte striped fibre channel frames into complete fibre channel frames and transmitting the complete fibre channel frames to the backplane data interface.